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CONTRACTING ORGANIZATION: Arkansas State University
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14. ABSTRACT Our purpose of the study is to evaluate the effects of hippotherapy on motor performance in individuals with disabilities. Fifty veterans will be recruited and receive traditional physical therapy and physical therapy including hippotherapy. Measures will be taken after each session and analyzed. This study will also evaluate the impact of the Beck PRIDE Center on health and well being and quality of life. It will document veteran completion of referrals and engagement with care across six domain areas. It will develop a program implementation manual that can be distributed to other educational institutions. The significance of these areas of investigation will further the model for civilian institutions to engage combat veterans with disabilities and their families on reintegration post employment.					
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INTRODUCTION

- 1) One purpose of the study is to evaluate the effects of hippotherapy on motor performance in individuals with disabilities. Fifty veterans will be recruited and receive traditional physical therapy and physical therapy including hippotherapy. Measures will be taken after each session and analyzed.
- 2) This study will also evaluate the impact of the Beck PRIDE Center on health and well being and quality of life.
- 3) It will document veteran completion of referrals and engagement with care across six domain areas.
- 4) It will develop a program implementation manual that can be distributed to other educational institutions.

The significance of these areas of investigation will further the model for civilian institutions to engage combat veterans with disabilities and their families on reintegration post employment.

BODY

The Beck PRIDE Center at Arkansas State University was founded to assist combat wounded veterans with personal rehabilitation, individual development, and education in a University setting. As part of the overall grant, we are evaluating the impact of the Center on veterans' health and well-being, and quality of life (referred to in this report as the "research project"). Specific services provided by the Beck PRIDE Center include the following:

- counseling (e.g., mental health counseling, rehabilitation counseling),
- physical rehabilitation,
- career development,
- resources and assistance for higher education,
- financial assistance,
- advocacy,
- assistance with disability claims, and
- support to achieve their post military service goals.

As of August 23, 2013, 86 participants were enrolled in the research project at the Beck PRIDE Center, an increase of 53 since the last annual report (we had 33 participants in 2012). Over the past year, each participant has completed the SF-12 survey (a series of 12 questions measuring the participant's perceived functional health and well-being). In addition, each participant has completed the Beck PRIDE Satisfaction Inventory (BPSI), a quality of life measure. Further, we have continued to monitor data gathered at intake and at follow-up visits, including participant demographics, education, and current treatment.

The remainder of this report is organized into 3 main sections based on data source: (1) SF-12 Health Score Summaries, (2) Quality of Life: Beck PRIDE Satisfaction Inventory Summary, and (3) Summary of additional Intake and Follow-up data. These brief summaries present a picture of how the Beck PRIDE Center research project is progressing.

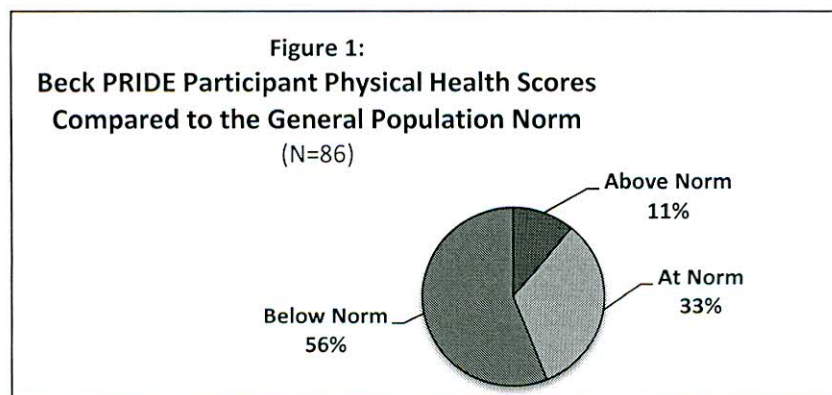
SF-12 HEALTH SCORE SUMMARIES

All 86 Beck PRIDE Center participants completed an SF-12 when they first enrolled in the study, and a follow-up survey has been completed by 11 of those participants. The possible score range for the SF-12 is 20-80, with 50 being considered the population norm. Overall, it appears that when compared with the general population, Beck PRIDE participants exhibit more physical- and mental-health problems. However, when looking at pre- and post-survey data from those participants who have completed the SF-12 a second time, those problems seem to be lessening (however, no statistically significant effects were found, largely because of low power with only 11 participants). Below is a breakdown of the physical-, mental-, and overall-health of

the participants based on the data gathered thus far. We will continue to collect SF-12 data from the participants throughout the project.

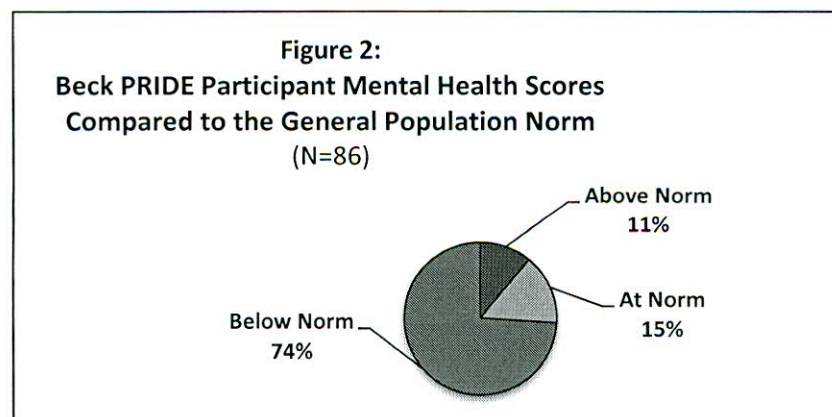
SF-12 Physical Health

Overall, upon entering the Beck PRIDE Center, self-reports indicate that few participants fare better than the general population in Physical Health (only 11% scored above the general population norm of 50). One-third of participants scored about average in the physical health component of the SF-12, but over one-half (56%) of the participants' scores indicated that their level of perceived physical health (e.g., physical functioning, bodily pain) is worse than individuals in the general population. The figure below (Figure 1) depicts the percentage of the research participants who are above, at, or below the general population norm in the physical health component of the SF-12.



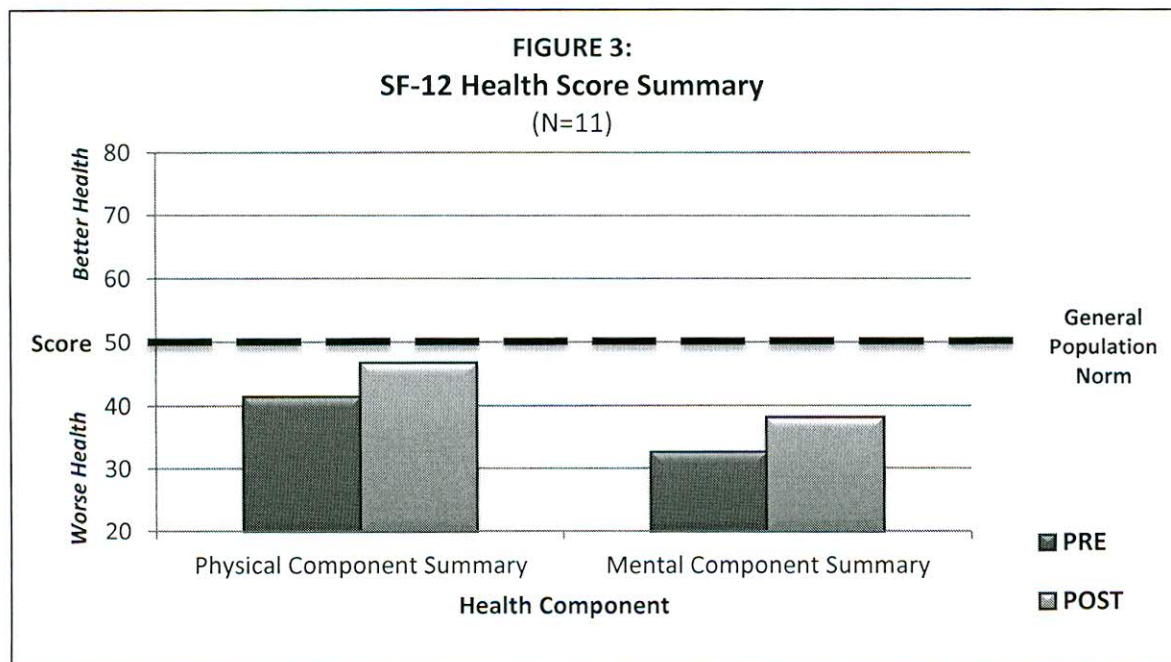
SF-12 Mental Health

Similar to physical health, it appears that only a few Beck PRIDE participants fared better in self-reported mental health than the general population upon entering the program (11% were above the general population norm of 50). Nearly 3/4 (74%) of the participants scored below the general population norm, indicating that mental health is a problem area. The figure below (Figure 2) depicts the percentage of Beck PRIDE research participants who are above-, at-, or below-the general population norm based on the mental health component of the SF-12.



SF-12 Overall Health

As mentioned above, both pre- and post-survey data have been collected from 11 participants. Those data indicate that although Beck PRIDE participants' SF-12 scores still fall below the general population scores in both physical- and mental-health, participants appear to be making gains in both areas as they participate in the Beck PRIDE Center. The figure below (Figure 3) shows participant self-reported physical- and mental-health status at both pre- and post-testing for those 11 participants. We will continue to conduct follow-up assessments using the SF-12 to monitor Beck PRIDE participant health.



QUALITY OF LIFE: BECK PRIDE SATISFACTION INVENTORY SUMMARY

The Beck PRIDE Satisfaction Inventory (BPSI) has been completed by each of the 86 Beck PRIDE participants. The BPSI measures the general satisfaction and quality of life of the veterans. With the BPSI, participants are asked to rate their satisfaction with the following eight domains of their lives: (1) Education, (2) Career Prospects, (3) Social Life, (4) Family Life, (5) Health, (6) Physical Activity, (7) Recreational Activity, and (8) Work Life.

Generally, when participants come to the Beck PRIDE Center, their overall quality of life score (based on the BPSI) is rather low, with an aggregated mean across participants of 2.4 on a scale from 1 to 4 (with 4 being a great deal of satisfaction). As with the SF-12, we have received follow-up BPSI data on 11 participants. However, as with the SF-12, 11 participants are not

sufficient for a proper pre-post survey analysis; therefore, no pre-post statistical analyses have been conducted at this time. Pre- and post-BPSI means by domain are reported in Table 1 below. Overall, the majority of participants appear to have at least *a little* satisfaction with their lives, but there are quite a few who experience *no satisfaction*. The pre-survey means (below) across domains for the 11 follow-up participants parallel the means for the total group. As with the SF-12, we will continue to collect BPSI data from the research participants as they come in and at the time of follow-up.

Table 1. BPSI Item Means: Pre- and Post-Assessment (N=11)

How much satisfaction do you get from...	Mean Responses	
	<i>Pre-Survey</i>	<i>Post-Survey</i>
<i>Education life</i>	2.8	3.1
<i>Career prospects</i>	2.6	2.7
<i>Social life</i>	2.0	2.7
<i>Family life</i>	3.2	3.0
<i>Health</i>	2.5	2.6
<i>Physical activity</i>	2.4	2.6
<i>Recreational activities</i>	2.2	2.8
<i>Work life</i>	1.6	2.1
OVERALL SCORE	2.4	2.7

SUMMARY OF ADDITIONAL INTAKE & FOLLOW-UP DATA

Below is a summary of 6 key areas assessed during the intake process for the Beck PRIDE Center. The key areas are (1) Demographics, (2) Education, (3) Deployment, (4) Medical or Physical Issues, (5) Current Treatment/Resources, and (6) Community Support/Outreach. As with the two assessments discussed above, we have intake data on all 86 participants, but do not have enough follow-up data to make any meaningful conclusions at this point. The Beck PRIDE Center team will continue to work on data collection. Below, we provide a brief description of the data received to date from intake.

Demographics. The majority of the Beck PRIDE participants are male (95%) and Caucasian (73%). The first female participant entered the study in July 2012. Since then, 3 more females have entered the study. Currently, participants' birth years range from 1954 to 1991, making their age range approximately 22 to 59 years. The largest number (49) were born in the 1980s, indicating that the majority of participants are in their mid-20s to mid-30s. Reports of marital status show that around half (52%) are married, and many others (46%) are divorced, single, separated, or remarried. Seventeen percent have never been married, 49% have been married

once, and 12% have married 2 or more times (the remaining participants did not respond to that item).

Education. Many of the veterans who come to the Beck PRIDE Center request assistance for their education needs. Out of the participants who responded to the education items on the intake, 57% reported needing educational advising, 45% reported needing services for tutoring and testing/placement/assessment assistance, and 86% of the participants reported needing assistance in requesting GI Bill benefit assistance and Vocational Rehab assistance.

Deployment. In order to receive services from the Beck PRIDE Center, veterans must have fought in a present day conflict (from Persian Gulf to present). Of those who responded to deployment items, 58% of veterans have been deployed one time.

Medical or Physical Issues. A majority of the medical and physical issues participants report when coming to the Beck PRIDE Center appear to be a result of their combat-related experiences and exposure to a warzone environment. Of the participants who responded to the impairment items on the intake form, 69% reported suffering from hearing loss or tinnitus, 80% reported suffering from mobility impairments, and 79% reported suffering from sleep problems (e.g. sleep apnea and insomnia). Other major issues with returning veterans are Post-Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI)--86% reported having PTSD, TBI, or both.

Current Treatment/Resources. As stated earlier in the report, 57% of the veterans come to the Beck PRIDE Center requesting education advising assistance. Many veterans also come to the Beck PRIDE Center requesting assistance with their Veteran's Affairs claims or disabilities; 77% of the veterans requested assistance for VA Benefits Enrollment and VA Benefits Disability Determination, and another 39% of the veterans requested assistance for Mental Health Counseling.

Community Support/Outreach. Anecdotally, a large percentage of the veterans who enter the Beck PRIDE Center appear to be socially withdrawn during the initial intake visit, and, in fact, their social life scores on the BPSI tend to be among the lowest across the domains. The Beck PRIDE Center has a strong desire to assist veterans with socialization and provides opportunities for veterans to take part in various social settings. One such opportunity is R & R Wednesdays, which are held each month. R&R Wednesdays allow veterans to gather at the Beck PRIDE Center to eat lunch and socialize with fellow veterans. The Beck PRIDE Center also encourages the veterans to be a part of community organizations (e.g. DAV, VFW, Wounded Warrior, ASVO) in which they have the opportunity to connect with other service members and begin feeling involved in society again after being discharged from the military. In these groups, veterans are able to be themselves and share their own experiences with others who can empathize with them. In the current Beck PRIDE research population, 85% of the participants

say they do not belong to any community veteran organization upon entering the program but are strongly encouraged to investigate some of the local community groups.

NEXT STEPS

As reflected above, when participants come to the Beck PRIDE Center, they may have physical or mental issues, they are not totally satisfied with their lives, and they are in need of various types of assistance. It appears that the Beck PRIDE Center is a mechanism to raise those satisfaction levels and provide assistance, but more follow-up data are needed to determine if there are significant effects. Beck PRIDE Center staff will continue to monitor participant progress in the key areas identified in this report by collecting baseline and follow-up data on the SF-12, the BPSI, and follow-up forms. In addition, because there has been some difficulty experienced in obtaining follow-up data from Beck PRIDE participants, the project's staff will continue working on additional mechanisms by which those data can be obtained more easily and more reliably. Our goal is to continue monitoring gains and to provide data to evaluate the impact of those gains.

HIPPOTHERAPY

Thirty six of the fifty proposed subjects have participated in this study to date. Subjects are veterans referred through Arkansas State University's Beck PRIDE Center. These veterans vary in medical diagnoses including low back pain, lower extremity pain, upper extremity pain, and neck pain. After signing an informed consent document, the participants were examined by a licensed physical therapist at the Reynolds center on the ASU campus to determine if he/she could participate in the study. The qualified participants were then randomly assigned to either Treatment Group A or Treatment Group B via a coin flip. Treatment Group A is participating in both hippotherapy and traditional therapy, for one hour once a week; Treatment Group B is participating in traditional physical therapy, twice a week for one hour. Each participant will remain at that treatment schedule for 15 weeks. After 15 weeks the participant will switch treatment schedules. Therefore, in weeks 16-30, Group A will receive physical therapy twice a week and Group B receives hippotherapy. The study will last for a total of 30 weeks for each participant. Measurements were taken on all participants following each session. The results will be analyzed and compared to see if they are similar or different. This study is still in progress.

No participant has received both treatments twice a week for every week in the study to date for a variety of reasons. To address this issue additional hours and weekend appointments have been made available for the participants. All participants have reported some pain or lack of functional ability with sessions, therefore pain and functional scales have been used after each session and data has been recorded for analyses. Preliminary data indicates that participants

receiving hippotherapy are showing an increase in function and decrease in discomfort at a faster rate than those receiving traditional physical therapy.

An International presentation of this study was presented at the Association of Schools of Allied Health (ASAHP) in Orlando Florida on October 24, 2012. This platform presentation described the study and analysis of data on the first few veterans that had completed the 30 week trial low back pain. An international poster presentation was presented at the American Hippotherapy Association (AHA) March 8, 2013. This poster included original plus additional data collected on the first few participants that completed the 30 week study with orthopedic conditions not including low back pain.

KEY RESEARCH ACCOMPLISHMENTS

Tasks Accomplished Objective 1 & 2

SOW- Task 1: *IRB expedited review.* Completed.

SOW-Task 2: *Establish data collection and data entry systems.* This task was developed pre-implementation of the research project. The measures used to track the progress of research participants are administered to them at the time of their intake. The research assistant makes a copy of all the necessary research items from the original file and creates a research file for each participant. These files are stored behind two locks in the Director's office. With each file, the intake information of each participant as well as the three survey instruments are entered into an Excel spreadsheet and then copied into a statistical package (SPSS) ensuring accuracy.

SOW-Task 3: *Recruit Staff.* Sandra Worlow is the Project Director, Kelly McCoy is the Project Manager, and Brianna Segraves is the Research Assistant on the project. A second research assistant was hired in Fall 2012 to assist with the production of the manual; however, she left the position in May 2013 to accept full-time employment. We are currently in the process of hiring Cory Lawson, and he will be cross-trained to work with both the research database and manual production.

SOW Task 4: *Enrolling new cohort.* Since the first research participant was enrolled on January 12, 2012, the enrollment process has been continuous with the current enrollment standing at 86 participants. Although some months have been slower than others, we are still averaging five to six new participants a month. The task of enrolling a new cohort is steady and continuous.

SOW Task 5: *Collect data pre/post.* The task of collecting pre and post data on each veteran is with hopes of following their improvement longitudinally. Post data has not been collected for any of our research participants because none have been discharged at this time. Post data will be collected at the time in which a veteran becomes discharged, when circumstances are best for the veteran or all goals have been met. Pre data on the other hand, is collected before the veteran receives any of Beck PRIDE's services at their initial intake visit. Follow-up surveys have been completed by 11 participants to measure individual progress.

SOW Task 6: *Analyze Data.* The process of analyzing data takes place frequently. When quarterly reports are submitted, data is analyzed and the demographics, services needed, etc., are identified. Through the process of analyzing the data, the Beck PRIDE Center has been able to look at what veterans need whenever they come for assistance. With that knowledge, the staff is able to see where the need is the greatest for veterans.

SOW Task 7: *Report Data.* Data has been reported to the Department of Defense every three months since the research project has begun. The findings of the data analyzed in the Beck PRIDE office have been reported quarterly and now with this second annual report. Beck PRIDE's research assistant on the project has filtered what data is significant to include in each report and what is acceptable to be omitted. Anomalies and major areas of similarities, as well as grave needs have been included in the previous reports. These concepts will continue to be reported in future reports.

SOW Task 8: *Follow existing cohort.* A system is in place to follow the existing cohort of the project. The research assistant contacts participants who have reached or need to come in for a 6-month visit. The three survey instruments administered at the intake are also administered at each follow-up appointment at 6-months since their last visit. Participants are encouraged to check in with Beck PRIDE from time to time in addition to their 6-month follow up appointments. The follow-up process has been in place and data is currently being collected.

SOW Task 9: *Collect discharge data.* As previously mentioned, no discharge data have been collected, analyzed, or reported. At this time, no research participants have met requirements to be discharged, met goals, or voluntarily quit the research project.

SOW Task 10: *Analyze discharge data.* Not applicable.

SOW Task 11: *Report discharge data.* Not applicable.

Objective 3:

SOW Task 1: *Order hippo equipment.* Completed.

SOW Task 2: *Install equipment.* Completed.

SOW Task 3: *Recruit subjects.* Ongoing (36 of 50 recruited).

SOW Task 4: *Initiate hippo research.* Ongoing.

SOW Task 5: *Collect data.* Ongoing.

SOW Task 6: *Analysis & Report.* Early review of limited data. Some discussion was included in the "Body" of the document.

Objective 4:

SOW Task 1: *Development of the draft manual.* As discussed in the October 2012 annual report, a meeting of the research group was held to discuss the design of the implementation manual. Dr. JoAnn Kirchner, a consultant on the project, also attended and worked with the research group on the development of an outline of the creation of the Beck PRIDE Center. A timeline of

the creation process was developed following the meeting and distributed to the research group. A second meeting of the research group with both Mark Reeves and Mary Williams from ASU Publications and Creative Services in attendance. The design for the implementation manual was decided upon and group members were assigned tasks for compilation of the content information. A third meeting between Mark Reeves, Sandra Worlow, and Dr. Hanrahan occurred just prior to the October 2012 annual report, and refinement of draft one content was discussed. An early draft was reviewed in late October by the Beck PRIDE Center National Advisory Committee. The design and content areas were reviewed, and several of the committee members offered suggestions which were incorporated in the manual design.

SOW Task 2: *Send out for review and modification.* During the second year of the project, the implementation manual has been sent out to a much larger group for review. Suggestions have been taken into account and incorporated into the current edition of the manual. Pending completion of this piece, a final draft will be disseminated to the edit team.

SOW Task 3: *Disseminate manual.* Not applicable.

REPORTABLE OUTCOMES

Beck PRIDE:

Still awaiting program discharges to evaluate pre-post data.

Hippotherapy:

Abstracts attached of two presentations.

CONCLUSION

The project has continued to move at a slow but steady pace. There have been no issues with equipment purchases, participant recruitment, software utilization or data collection to date. To ensure better compliance with hippotherapy clients, schedules have been modified. The manual is about ready for distribution.

Progress has been timely as noted on the SOW.

REFERENCES

APPENDIX 1

ASAHP ABSTRACT FORM

Topic Number: 3. Research alternative models of service delivery/care

1. **Abstract Title** (capitalize) THE EFFECTS OF HIPPOThERAPY ON MOTOR PREFORMANCE AND FUNCTION IN UNITED STATES MILITARY VETERANS WITH LOW BACK PAIN

2. **Author Name(s)** (No titles/degrees), **followed by Institution** (in Parentheses)

Roy Lee Aldridge Jr
(Arkansas State University)

3. Abstracts **must** contain the following sections:
(Abstracts without these clear statements may be rejected)

- **Hypothesis/Issue to be addressed** – May be a scientific hypothesis, a clinical issue, a population to be served, an educational need etc.
- **Method** – Experimental design, clinical approach, educational model, etc.
- **Observations/Outcomes** – experimental data, clinical or educational outcome, etc.
- **Conclusion**

Insert Abstract Below

200 Word Single-Spaced formatted in Times New Roman 12-point font.

Hypothesis/Issue to be Addressed: To investigate if any differences are found in motor functioning and function when adding hippotherapy to a traditional physical therapy program with individuals with Low Back Pain.

Methods: The subjects included veterans from various branches of the United States Military. Treatment A consisted of the traditional physical therapy program with the addition of hippotherapy for 15 weeks. Treatment B consisted of a traditional physical therapy program for 15 weeks. Veterans were randomly selected to receive either Treatment A or B initially. A-B Single-Subject Repeated Measures Design

Observations/Outcomes: The initial results of this study showed that there were differences found when adding hippotherapy as an adjunct therapy to a traditional physical therapy program.

Conclusion: The addition of hippotherapy to a traditional physical therapy program seems to improve motor functioning in an adult with functional issues.

APPENDIX 2

Presenter information:

- **Names, credentials and brief biographical sketch of presenters (and non-presenting co-authors)**

Roy Lee Aldridge Jr received a bachelor's degree in Physical Therapy from The University of Tennessee in 1990 and an Advanced Physical Therapy degree in 2001 from The University of Tennessee. Roy received his Specialist Degree in 2004 and his Doctoral Degree in 2008 from Arkansas State University. Roy has been published and presented in the effects of hippotherapy. Roy serves on the AHA Board of Directors. Roy is trained in Level I and II through the AHA

☐ **Content description:**

- **Title of presentation**

THE EFFECTS OF HIPPO THERAPY ON MOTOR PREFORMANCE AND FUNCTION IN UNITED STATES MILITARY VETERANS WITH ORTHOPEDIC ISSUES

- **Abstract (with figures if appropriate) – Max. one page, any format.**

- **If research paper, include Intro, methods, results, discussion.**
- **References only on second page.**

Hypothesis/Issue to be Addressed: To investigate if any differences are found in motor functioning and function when adding hippotherapy to a traditional physical therapy program with individuals with Orthopedic Issues.

Methods: The subjects included veterans from various branches of the United States Military. Treatment A consisted of the traditional physical therapy program with the addition of hippotherapy for 15 weeks. Treatment B consisted of a traditional physical therapy program for 15 weeks. Veterans were randomly selected to receive either Treatment A or B initially. A-B Single-Subject Repeated Measures Design

Observations/Outcomes: The initial results of this study showed that there were differences found when adding hippotherapy as an adjunct therapy to a traditional physical therapy program.

Conclusion: The addition of hippotherapy to a traditional physical therapy program seems to improve motor functioning in an adult with functional issues.

- **Brief statement describing how this presentation adds to the body of knowledge about hippotherapy and how it will be beneficial to participants. For example, how it assists with care, improvement of equine and HPOT.**

This presentation will reveal the latest endeavors in the use of hippotherapy on our veterans as they return home and address their physical needs.